

What Is Claimed Is:

1 1. A method of performing a single determination of distance to an echo point in a
2 wire-line medium, said method comprising:
3 transmitting a first sequence of bits on said wire-line medium;
4 monitoring said wire-line medium to determine reception of said first sequence of bits
5 as an echo from said echo point; and
6 computing a distance to said echo point according to a time taken to receive said echo
7 after said transmitting, whereby said single determination is performed based on said first
8 sequence of bits.

1 2. The method of claim 1, wherein said first sequence of bits exhibits a good auto-
2 correlation property, whereby said first sequence of bits exhibits a low correlation with said
3 first sequence of bits shifted by one or more positions.

1 3. The method of claim 2, wherein said monitoring comprises:
2 generating a monitored sequence of bits by sampling a signal received on said wire-
3 line medium; and
4 comparing said monitored sequence of bits and said first sequence of bits on a bit by
5 bit basis.

1 4. The method of claim 3, wherein said generating and said comparing are performed
2 continuously such that said reception of echo can be determined accurately.

1 5. The method of claim 3, wherein said comparing comprises performing a XNOR
2 operation.

1 6. The method of claim 3, wherein said generating comprises setting a monitored bit
2 to a logical 0 if a voltage level on said wire-line medium is less than a threshold voltage and
3 to logical 1 otherwise.

1 7. The method of claim 3, wherein said monitoring further comprises measuring a
2 correlation factor representing a number of matching bits encountered in said comparing.

1 8. The method of claim 1, said computing comprises multiplying said time taken with
2 a velocity value, wherein said velocity value corresponds to velocity of propagation of bits
3 on the said wire-line medium.

1 9. The method of claim 1, wherein said wire-line medium comprises a local loop.

1 10. An line card performing a single determination of distance to an echo point in a
2 wire-line medium, said line card comprising:

3 a port coupled to said wire-line medium;

4 means for transmitting a first sequence of bits on said port; and

5 means for monitoring said wire-line medium to determine reception of said first
6 sequence of bits as an echo from said echo point,

7 wherein a distance to said echo point is computed according to a time taken to receive

8 said echo after said transmitting, whereby said single determination is performed based on
9 said first sequence of bits.

1 11. The line card of claim 10, wherein said first sequence of bits exhibits a good auto-
2 correlation property, whereby said first sequence of bits exhibits a low correlation with said
3 first sequence of bits shifted by one or more positions.

1 12. The line card of claim 11, wherein said means for monitoring is operable to:
2 generate a monitored sequence of bits by sampling a signal received on said wire-line
3 medium; and
4 compare said monitored sequence of bits and said first sequence of bits on a bit by bit
5 basis.

1 13. The line card of claim 12, wherein said wire-line medium comprises a local loop.

1 14. A DSL Access Multiplexor (DSLAM) comprising:
2 a switch fabric; and
3 a plurality of line cards coupled to said switch fabric, a first line card contained in said
4 plurality of line cards being coupled to said wire-line medium, said first line card comprising:
5 a port being coupled to said wire-line medium;
6 a test processor operable to transmit a first sequence of bits on said wire-line
7 medium, said test processor monitoring said wire-line medium to determine reception
8 of said first sequence of bits as an echo from said echo point,

9 wherein a distance to said echo point can be computed according to a time
10 taken to receive said echo after said transmitting, whereby said single determination
11 is performed based on said first sequence of bits.

1 15. The DSLAM of claim 14, wherein said first sequence of bits exhibits a good auto-
2 correlation property, whereby said first sequence of bits exhibits a low correlation with said
3 first sequence of bits shifted by one or more positions.

1 16. The DSLAM of claim 15, wherein said test processor is further operable to
2 generate a monitored sequence of bits by sampling a signal received on said wire-line
3 medium, and comparing said monitored sequence of bits and said first sequence of bits on
4 a bit by bit basis.

1 17. A test processor for performing a single determination of distance to an echo
2 point in a wire-line medium, said test processor comprising:

3 an outbound interface;
4 a transmission block causing said outbound interface to transmit a first sequence of
5 bits on said wire-line medium; and
6 an inbound interface generating a monitored sequence based on a signal received on
7 said wire-line medium,

8 wherein said monitored sequence is examined to determine reception of said first
9 sequence of bits as an echo from said echo point, and wherein a distance to said echo point
10 is computed according to a time taken to receive said echo after said transmitting, whereby

11 said single determination is performed based on said first sequence of bits.

1 18. The test processor of claim 17, further comprising a signal generation and
2 monitor block which receives data indicating a specific port on which said wire-line medium
3 is connected, wherein said first sequence of bits are caused to be transmitted on said specific
4 port.

1 19. The test processor of claim 18, wherein said signal generation and monitor block
2 examines said monitored sequence to determine reception of said first sequence of bits.

1 20. The test processor of claim 19, wherein said signal generation and monitor block
2 receives said first sequence of bits and a data bit rate from an external system, wherein said
3 first sequence of bits are transmitted at said bit rate.

1 21. The test processor of claim 19, further comprising a parameters table storing said
2 first sequence of bits and said bit rate.

1 22. The test processor of claim 18, wherein said signal generation and monitor block
2 examines said monitored sequence to determine reception of said first sequence of bits as an
3 echo from said echo point, and computing a distance to said echo point according to a time
4 taken to receive said echo after said transmitting, whereby said single determination is
5 performed based on said first sequence of bits.

1 23. The test processor of claim 18, wherein said first sequence of bits exhibits a good
2 auto-correlation property, whereby said first sequence of bits exhibits a low correlation with
3 said first sequence of bits shifted by one or more positions.

1 24. The test processor of claim 23, wherein said first sequence of bits comprise
2 relaxed Barker codes.